17519

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Illustrate your answers with neat sketches ***wherever*** *necessary.*
(3) Figures to the ***right*** *indicate* ***full*** *marks.*
(4) Assume suitable data, if ***necessary****.*

Marks

1. A) Attempt **any three**: **12**

a) Define modulation. Why it is necessary ?

b) Draw the waveform for FSK and PSK modulation.

c) Draw block diagram of TDMA. Describe its working.

d) Draw AM wave in time domain, when, ma = 1 and ma = 0.5.

B) Attempt **any one**: **6**

a) A transmitter transmits 10 kW of power without modulation and 12 kW after amplitude modulation. What is the modulation index ?

b) Draw and explain QPSK modulator.

2. Attempt **any four**: **16**

a) Draw the block diagram of standard telephone system. Describe its function.

b) Draw the block diagram of FM receiver . State the function and each block.

c) Draw neat block diagram of delta modulator. Describe its operation.

d) Consider the data stream 11011010 and encode using,

i) Unipolar NRZ ii) Bipolar NRZ

e) Draw the block diagram and explain the working of FDM.

f) Draw the block diagram of digital communication system.

3. Attempt **any four** : **16**

a) Draw waveform of PWM and PPM.

b) Define sampling theorem and draw waveform for natural sampling.

c) What is multiplexing ? State different types of multiplexing techniques used.

d) Compare unipolar RZ and NRZ encoding methods.

e) Compare FDM and TDM w.r.to.

1) Definition 2) Schematic dig 3) Principle.

P.T.O.

Marks

4. A) Attempt **any three** : **12**

a) Describe ionosphere propagation with the help of neat diagram.

b) Draw the waveform for the bit sequence given below :
1 1 0 0 1 0 1 0 using unipolar RZ and polar RZ encoding technique.

c) State the two advantages and disadvantages of FSK over ASK.

d) Describe the concept of frequency reuse.

B) Attempt **any one** : **6**

a) Describe PCM transmitter with the help of neat diagram. What is quantization error.

b) Draw and explain the block diagram of cellular mobile phone system.

5. Attempt **any four** : **16**

a) Compare PAM, PWM and PPM system w.r.to bandwidth, transmitted power, noise immunity, characteristic.

b) Draw AM and FM signal in frequency domain.

c) Draw block diagram of BPSK transmitter. State two advantages of it.

d) Compare baseband and passband transmission (any 2 point). State the limitation of baseband transmission.

e) Define Bit rate and Band rate.

f) State the steps for forward and reverse call processing.

6. Attempt **any four** : **16**

a) Compare natural sampling and flat top sampling.

b) Describe high level AM transmitter with the help of block diagram.

c) Draw and describe the block diagram of ADM.

d) Compare TDMA and FDMA on the following points :

i) Multiplexing technique

ii) Power efficiency

iii) Synchronization

iv) Guard band

e) Compare BPSK and DPSK.
